PROSPECTS FOR CO_2 CAPTURE AND STORAGE (CCS) – FACT SHEET

One solution to cope with greenhouse gas emissions is to capture CO_2 generated in power plants or industrial installations and store it underground, e.g. in depleted oil or gas fields or in underground water layers. The IEA publication Prospects for CO2 Capture and Storage *discusses the role of this option in the future energy supply and demand, and analyses a decrease in emissions resulting from its deployment.*

The main underground CO_2 storage potential is in saline water layers and in partially depleted oil and gas fields. These underground reservoirs allow for storage of significant amounts of CO_2, equivalent to decades or even hundreds of years of global emissions.

CCS technologies offer the opportunity to continue using fossil fuels (such as coal, oil or gas) without significant emissions of CO_2. In addition, the captured CO_2 may be used to enhance the output of oil and gas in the respective fields. The high costs for capturing CO_2 could thus at least partially be offset by additional oil or gas production.

Currently, there are two projects on a larger scale to test CO_2 storage: The "Sleipner Project" in the North Sea, off the Norwegian coast (storage in a deep underground saline water reservoir) and the "Weyburn Project" in Canada (storage in an oil field).

The main capture potential is in the electricity sector, but interesting opportunities exist in fuels processing and industrial sectors as well. Most of CO_2 is released on coal fired power plants. Therefore, more than half of the potential of CCS is associated with coal fired processes.

CCS could start on a large scale in the IEA member countries from 2015 onwards. This book suggests that CCS could provide significant emissions reductions by 2050 and that more than a third of global electricity generation may be equipped with CCS by that date.

Today, the cost of capturing and storing CO_2 range from $50 to $100 per tonne. Costs can be brought down to $25-$50 until 2030, but this would require more efforts in research and development. Even if costs are reduced policy incentives would be needed to stimulate the market uptake of CCS technologies. Emissions trading systems may offer such incentives, if carbon prices are high enough to make CCS competitive.

Adequate research has to be done to prove storage permanence, and public awareness and acceptance have to be achieved. Global CCS research and development expenditure needs to be increased from currently $100 million to $500 million per year.